Motivational Activities and Ideas for Attitude Improvement among Grade School Children in the Area of Mathematics

An Honors Thesis (HONRS 499)

by

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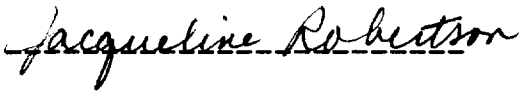

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PURPOSE

When children in today's society are introduced into the life long process of mathematics unfortunately it is not looked at with an excited point of view. Children see the world of math through their parents, teachers, and working society around them. Many times in life they will hear people say "Oh, I hated math as a child," or " Who really balances their checkbook anyway?", this leads them to the belief that it is "ok" to do poorly in math because this is the way society treats the world of mathematics. Children see and feel that it really does not matter later in life, so why should they be concerned about it now ? Also, many times children are turned off to the subject of math because of the drill and practice which becomes redundant and boring.

The purpose of this paper is to help people understand that math is a life long pursuit and it is something that can be enjoyed as a child in school. This thesis will help teachers and parents understand how to make math a more enjoyable subject in school. It will also provide many techniques to eliminate the anxiety felt in the math classroom by providing a number of suggestions for fun and meaningful activities.

INTRODUCTION

Many misconceptions about math form in the minds of young children. During my student teaching I recall a young ten year old boy stating "I'm not very good at math because I'm not very smart." If children could only learn and discuss in the beginning of their young lives how important math is, it would help attitude improvement. Children need to realize that they do not have to be a genius to do math. It can be fun, it can help students in their daily activities, and math is not just for people with good memories. Children would realize this by brainstorming all the ways in their daily lives that they use math. Children will see that math is used for sports, games, and counting their allowance. Lastly, it is important to have children understand that math can be creative and fun at the same time!

As a teacher begins a new year with a fresh class it is important to reach each child's individual needs. Math is one of these needs. By having the children discuss what they want in a math program, the needs can by met. Talk about games, lessons, homework, and how time in class can be spent. Have the children discuss the idea of individual math work, working in groups, and whole class lessons. By having several strategies with their needs involved it will reduce anxiety and relax those students who are still unsure about the subject area.

The next few pages will be a series of ideas and activities for a class and its mathematics program. These ideas presented will support a curriculum which will meet the needs of each student and his or her ability in the subject of math. Incorporated in some of the actvities are ways to motivate students to do well and make goals for their own learning. Along with the students' goals, teacher goals can also be met. One of the goals a teacher strives for in her students is higher level thinking and creativity. These concepts will be developed by the student with the activities introduced throughout this paper.

LEARNING CENTERS

A learning center means many things. It can be described as small group or individualized activities in certain parts of the room. It can also be described as a "set your own pace" type of learning. Lastly, it is an area of study that is independent and self evaluated. I have been in several different rooms in my experience and seen many learning centers. Unfortunately, the most common way I have observed a learning center is a box filled with good ideas covered in dust.

Children need to learn in a variety of settings. Today in society I have noticed that the young minds of the world have the capabilities of being young independent learners, but rely entirely on the teacher to spoon feed the information directly to them. A learning center should be a challenge to a child just as much as any other activity. They are made to be fun which is a motivator as well.

Some of the ideas I have researched are using learning centers as rewards to the children if they complete their homework early. Children enjoy the thought of being able to move around and work after being given a choice. By letting a student choose between learning centers, they are perfecting and mastering skills on their own.

Another idea is to have a Learning Center Stations Day once a week. This is an excellent idea that the children

will look forward to in the week. The process is to divide the class into equal ability groups and each week place them at a different learning center for a specific amount of time. Then, after they have worked for a specific amount of time, the teacher explains the idea of rotating. Start the children by rotating them only once in the first few weeks and then as they progress, increase the rotation. Each week they will begin on the game and level they ended with the previous week. This is good for class cooperation and excellent for reinforcement of certain math skills. This also provides an opportunity for the teacher to identify a frustrated child and provide extra instruction.

The last idea for the learning centers is to have the children make their own learning center to add to the classroom. By giving them ideas on games to make or create they will be able to develop their own fun with math.

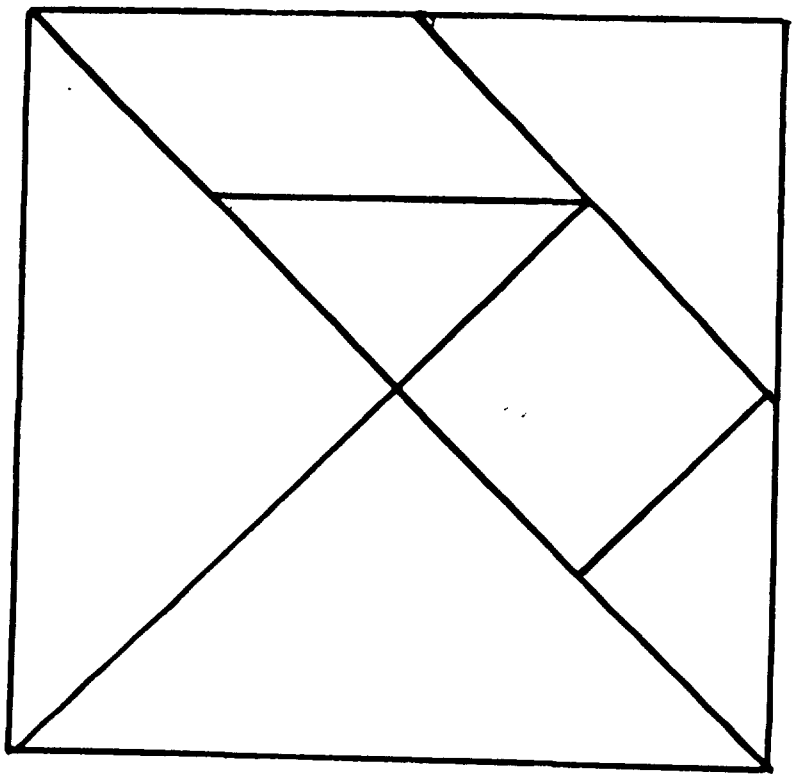
LEARNING CENTER IDEAS

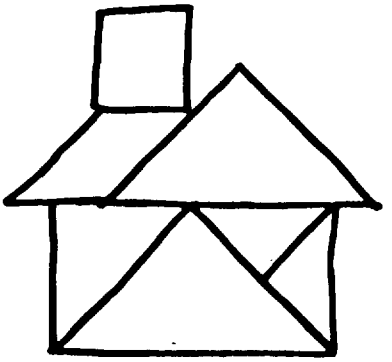
1. Tangrams and Puzzles to Solve
2. Trivial Pursuit Math (regular level and advanced)
3. Cross Out Singles (dice game working with addition)
4. Largest Sum / Greatest Difference (dice game)
5. Magic Squares (children create their own)
6. Matrix Flashcards
7. Fraction Game
8. Multiplication Bingo Math
9. Regular Board Game Questions about Math
10. Problem Solving Questions Game

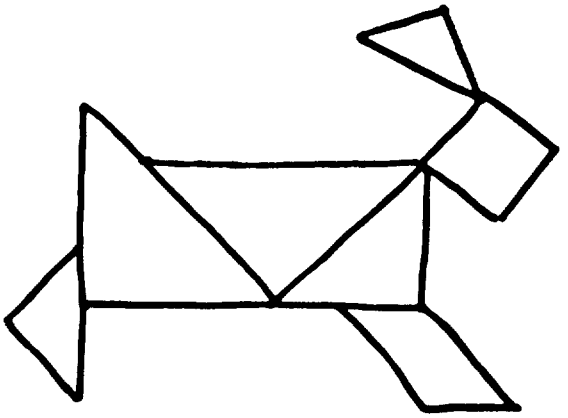
1. TANGRAMS AND PUZZLES TO SOLVE

This is a game that will be a constant challenge to the children throughout the year. It is a series of seven different shaped pieces used to make different figures and designs. The children will be able to challenge one another and race to see who can create the figure first. After they have worked on the game for a while they can switch their strategy and develop different shapes of their own, trace the outline, and have the challenger try to figure out their puzzle.

This type of game uses skills of creativity and patience. The children will have to think divergently to figure out new ways of beginning each puzzle. They will also be challenged when creating their own puzzles for their challenger to figure out.







2. TRIVIAL PURSUIT MATH

Trivial Pursuit Math is a great game the children will enjoy playing at the many different levels available. This is set up similar to the original Trivial Pursuit. Each child moves around the board answering questions trying to land on the main category space. When they land on that space and are able to answer the question correctly then they mark a check on the score card for that section. The first person to receive five check marks, one in each category, wins the game.

The five different categories in the game are basic math, money math, story problems, algebra, and geometry. The questions in each section deal with some area of that particular area of math. For example, basic math could be as simple as twenty-four plus forty-four or seven hundred and thirty-six divided by twenty-two. Money math could ask a question dealing with estimating the cost of a car being given two choices or asking how many dimes are in three dollars and fifty-three cents. Story problems could be very simple or more complex problem solving questions. Geometry could be stating the definition of a square or triangle. Last, algebra could be as complex as $2x+4x+5x=22$ or as simple as $n+2=8$.

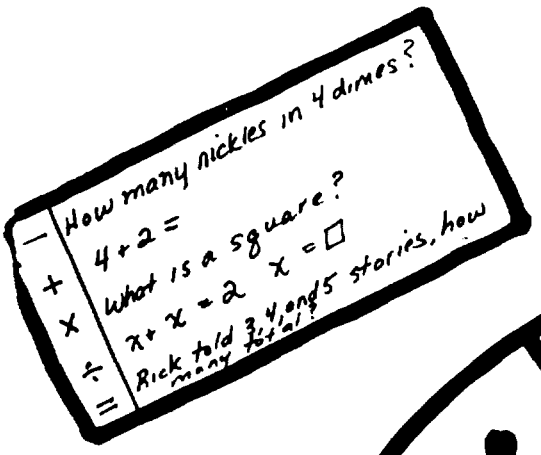
This game is an excellent strategy game to have children play for many reasons. It helps them plan their way around the board and challenge their opponent's

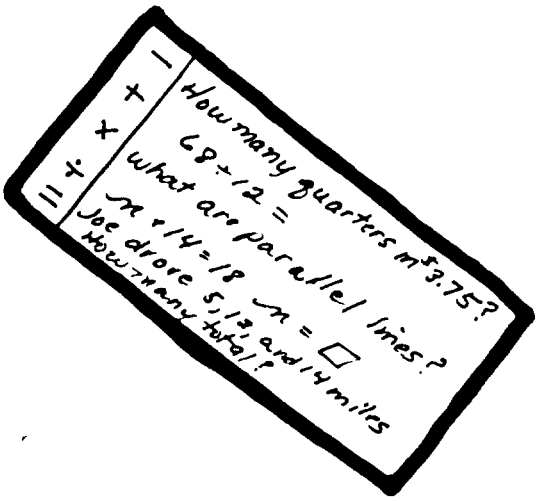
strategy. It also serves as a reinforcer in drill and practice of basic math skills.

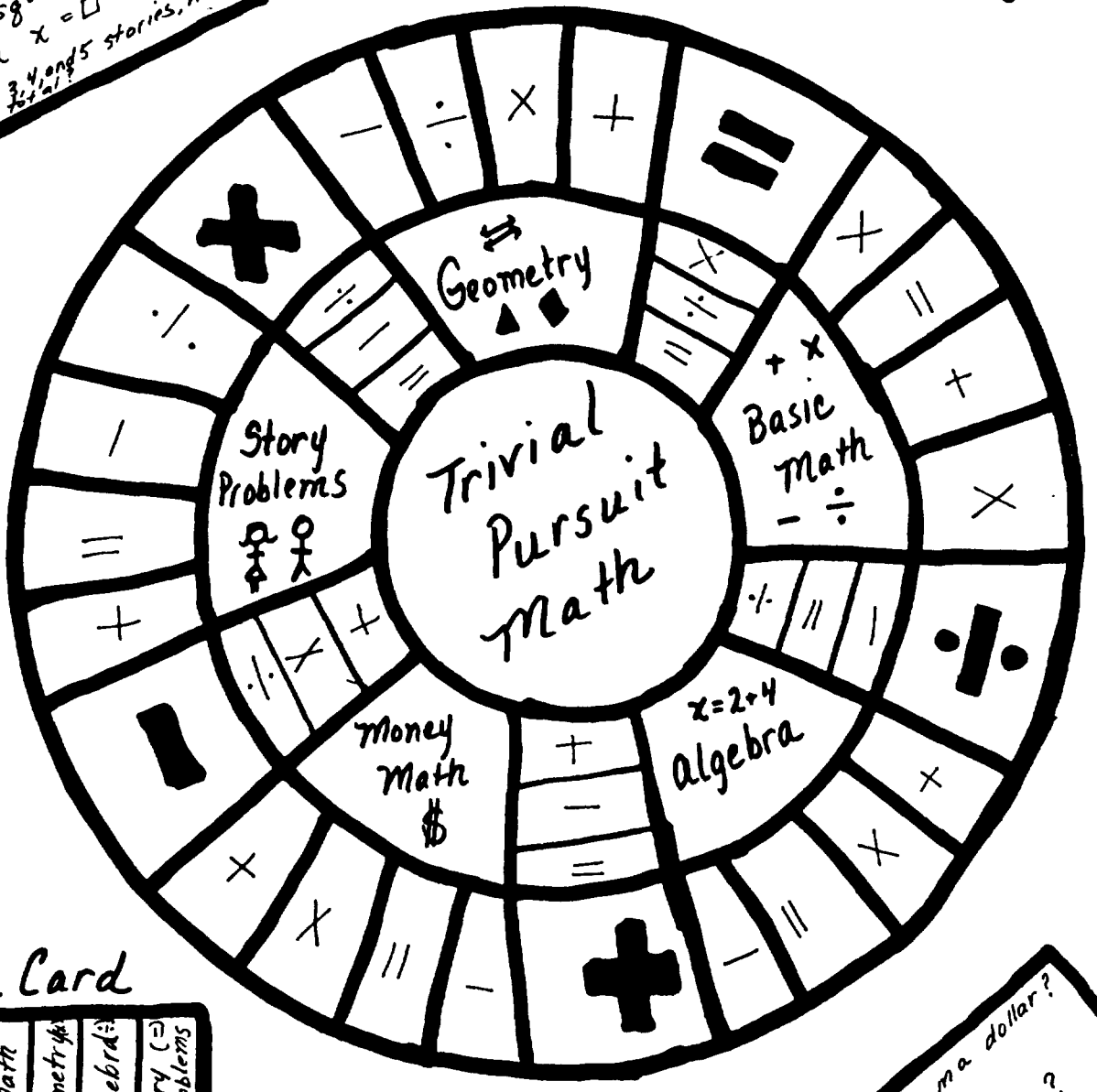
There would be three different levels of questions. The children could start with beginners level and work their way up to the more advanced level questions of the game.

This game can also be played in a whole class situation by making teams and letting the children figure out the answers as a whole. The actual game board would not be used. The teacher would simply give questions and have a certain amount the children would have to get correct.

Trivial Pursuit Math
Board

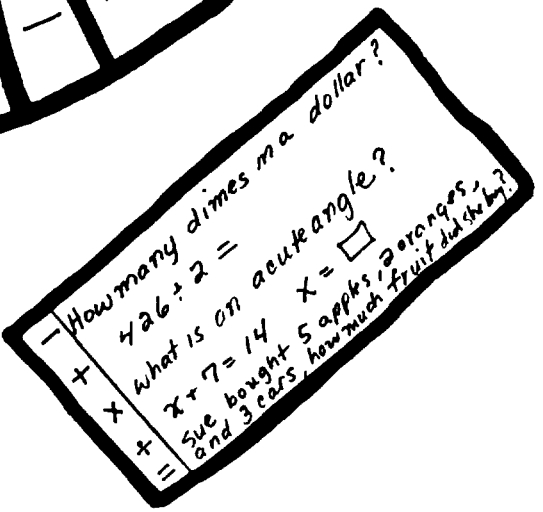






Score Card

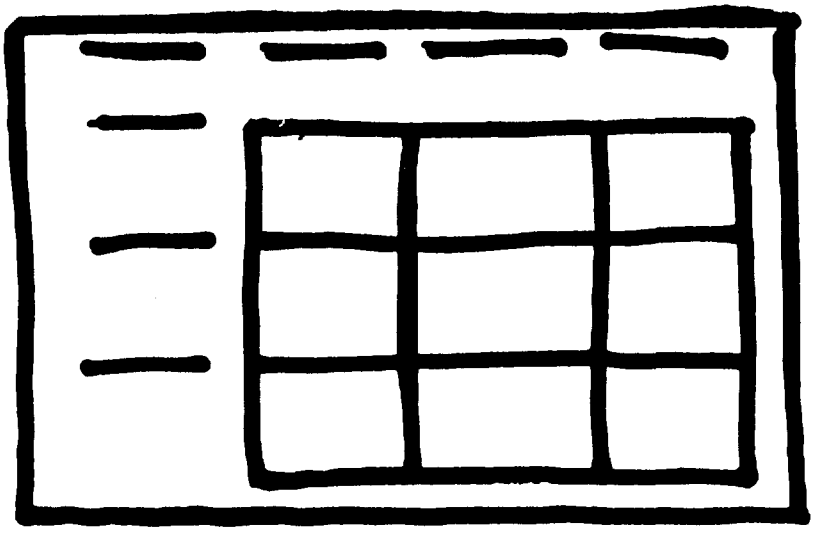
Name	$ Math (−)	Basic (+) Math	Geometry (=)	Algebra (÷)	Story (=) Problems
Jim		✓			✓
Sally			✓		
Ted		✓	✓	✓	



3. CROSS OUT SINGLES DICE GAME

Cross Out Singles is a very simple game in which the children are given dice and a rub erase graph sheet. They roll the die and place the number anywhere they choose in the graph sheet. After they have filled in the graph completely, they add the numbers across and down to fill in the spaces provided. If a child has a number that is not shown at least twice they have to cross it out. When they have finished crossing out all the single numbers they total the rest of the numbers and the highest amount wins a point for that game. The first child to receive five points wins the game.

This is an excellent game for a few reasons. It can be played in pairs, as a class, or in small groups. It provides reinforcement for addition and number recognition. The children will eventually move to a higher level of thinking and begin problem solving skills by having a plan on where to put numbers. Children enjoy this game a great deal. It is a quick activity to use for extra moments throughout the day as well as a learning center.

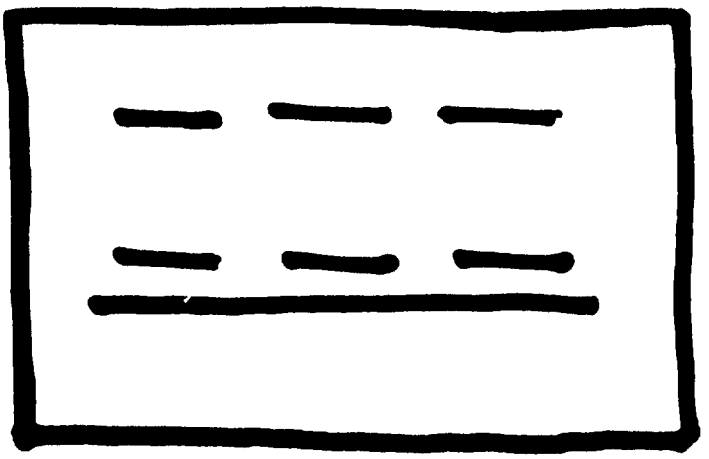


4. LARGEST SUM / GREATEST DIFFERENCE

Largest Sum / Greatest Difference is an excellent game for a learning center because it provides reinforcement in addition, subtraction and multiplication. The children play the same game but can choose which skill to practice.

The children are given dice and a rub erase sheet with blanks to fill in numbers. They fill in the numbers by rolling one die at a time. After they have filled in all the number slots they add, subtract, or multiply them together. The child with the largest amount in addition or multiplication and the smallest amount in subtraction wins a point for that game. The child reaching five points wins the game.

This game is a lot like Cross Out Singles because it challenges the learner to think about where to put the numbers. The game's strategy is similiar but also has to do with luck making it a lot of fun!



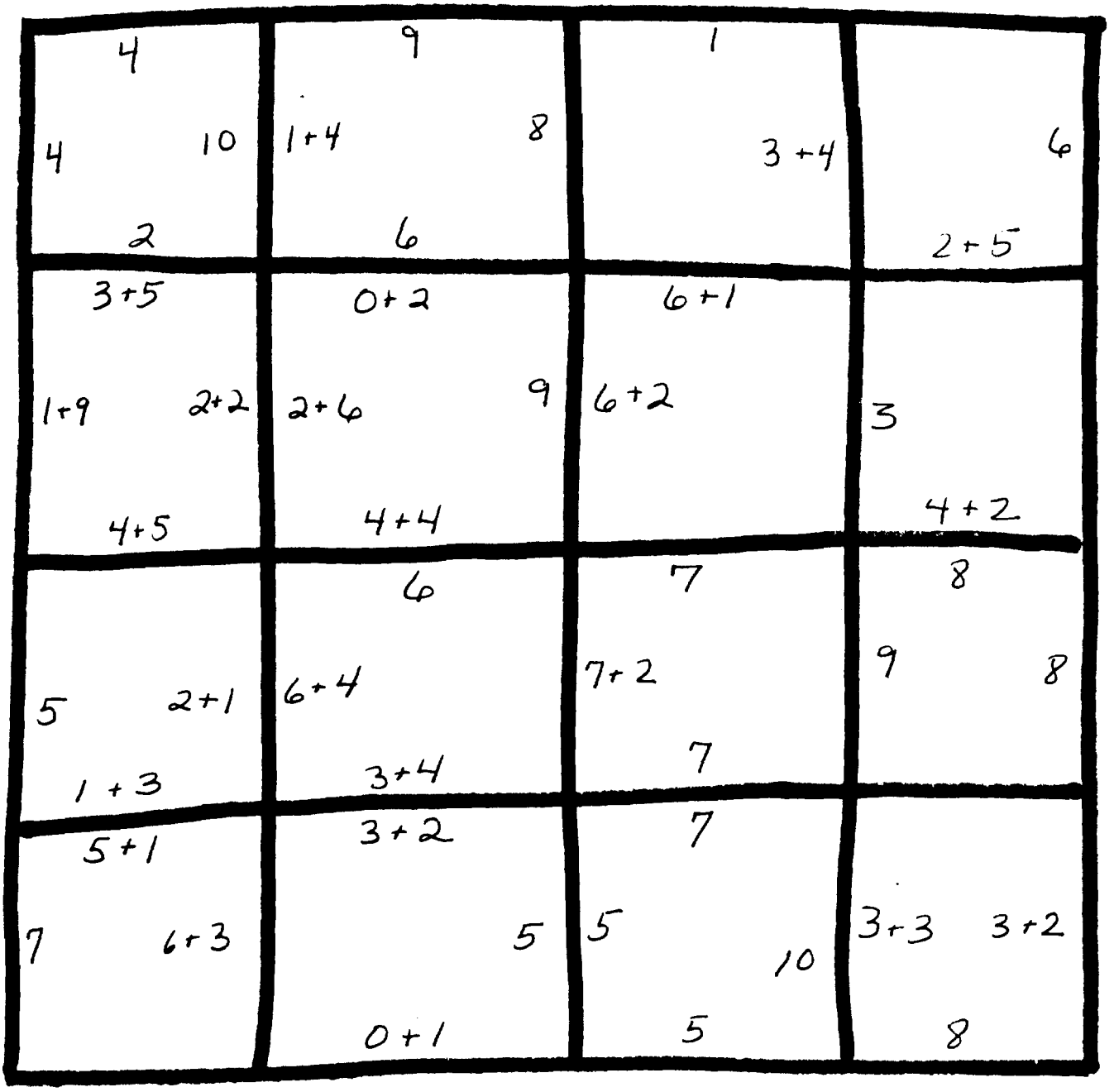
5. MAGIC SQUARES

Magic squares is a game that would take a little more time to prepare because the children would need different challenge sheets each time they play the game. The best way to keep them interested is to have suggestions about how to make more questions math related or to have the children make their own magic squares to challenge one another.

The children receive a sheet of paper, cut out each shape on the black lines, and then reshape the original figure with the questions and answers fitting together in the correct places.

The children can create their own questions and puzzles for one another to figure out in their group at that particular learning center. Children are using creativity and higher level thinking skills to challenge one another. This is a lot of fun and can be a race too!

Magic Squares



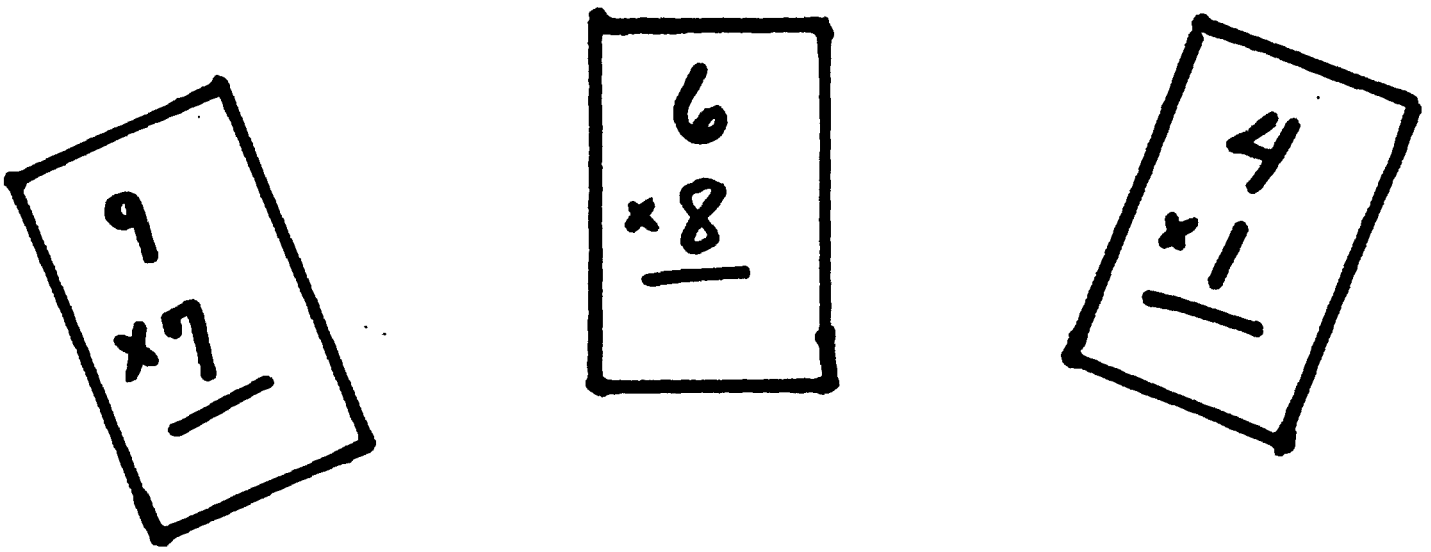
6. MATRIX FLASHCARDS

Matrix Flashcards is a very simple game that challenges children to think very quickly about their multiplication facts. The game is set up with a second hand watch and a variety of multiplication questions on flashcards. The challenge is to answer the question in less than five seconds. If the student does not answer the question that quickly then they must look for the answer on the matrix and will not receive a point for that question. The first child to receive ten points wins a game.

This is a game for practice in multiplication math drill. It can also be adjusted for lower level learners by having them multiply by writing it. Then if they receive the correct answer they are given a point.

This is a game that would need a backup plan because of the shortness of time it takes to play. Many children could play the game with a game host and a group of contestants. The first person to write the answer correctly and hold it up receives a point etc. Overall, it is fun for the children and is more challenging than a worksheet or workbook page.

Matrix and Flashcards

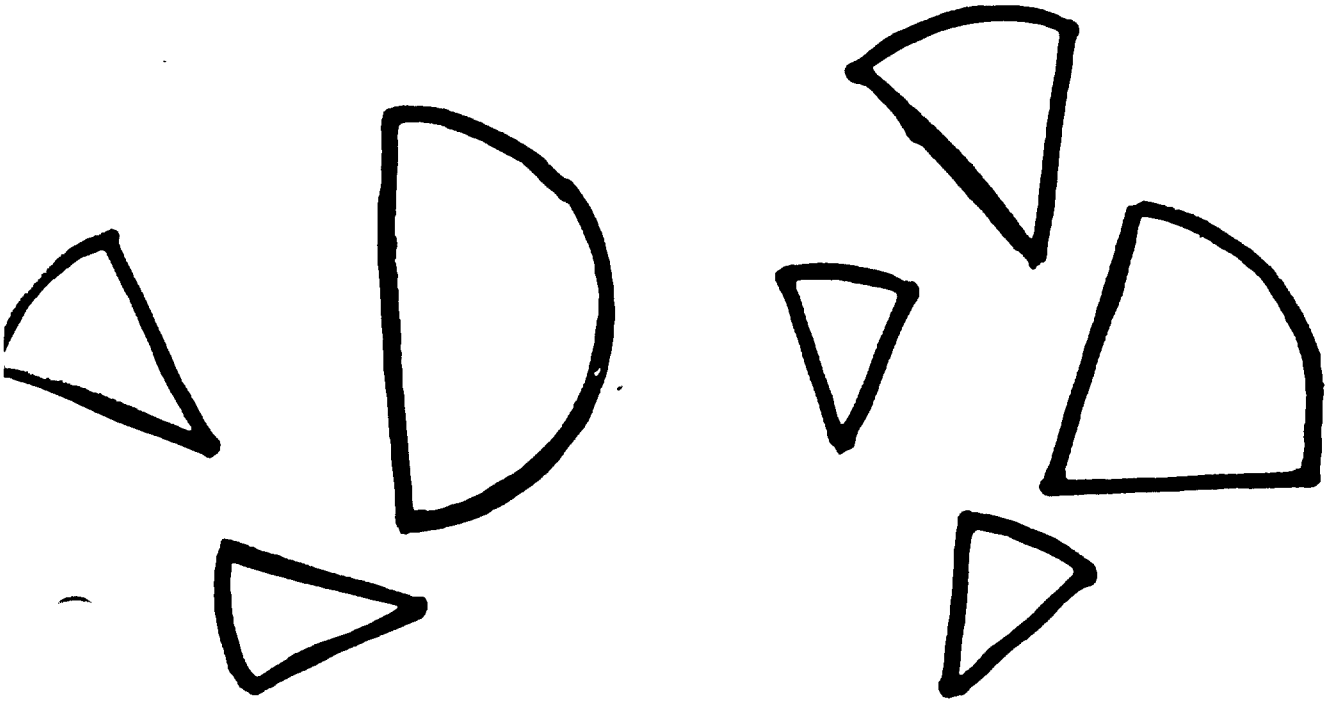


0	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

7. FRACTION GAME

Fractions is a fun game the children enjoy and will have fun playing over and over again. The children are given a number of different fraction pieces until they are all handed out. The first person lays a piece down and then the next person follows laying down a piece working towards completing the circle. Whoever completes the circle with their piece wins that circle. When all the circles have been completed, the winner is the child with the most amount of circles.

The children will eventually have strategies on looking at other children's pieces around the playing ground enabling them the last piece so they can win it. It is challenging and fun. The game can change instantly at the end because the person who is loosing throughout the game could end up being the overall winner.

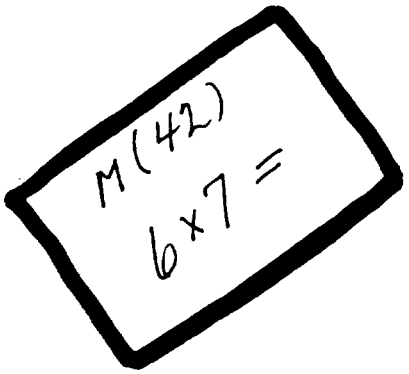


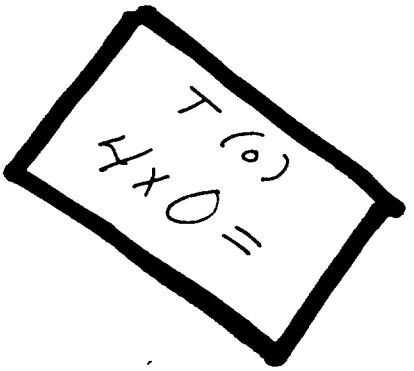
8. MULTIPLICATION BINGO MATH

Multiplication Bingo Math is very much like the regular game of bingo. The only difference is the children have to find the space by figuring out a problem to be able place a chip on that space. The children enjoy this because it is a challenge to win, and in order to win they have to do the math work.

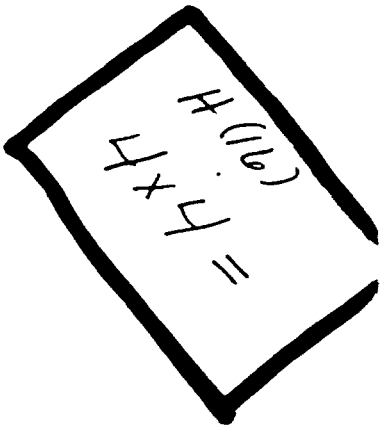
Many of the problems for the game can be at different levels. There can be a one, two, and three digit game questions and boards. This game can also be adapted to addition, subtraction, and division. This game requires children to listen and calculate problems along with remembering which column the answer is in on the board.

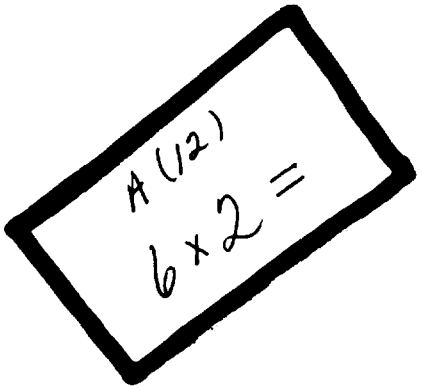
Math Bingo Board

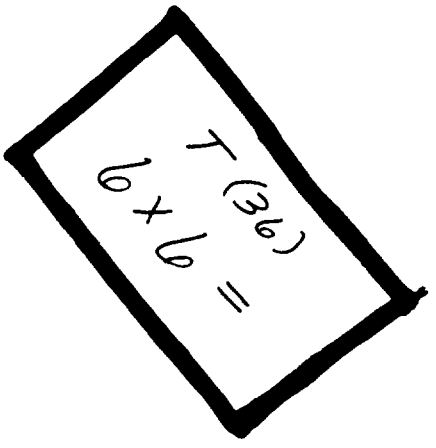




M	A	T	H
42	12	36	40
4	68	72	16
1	7	0	21
8	11	81	6





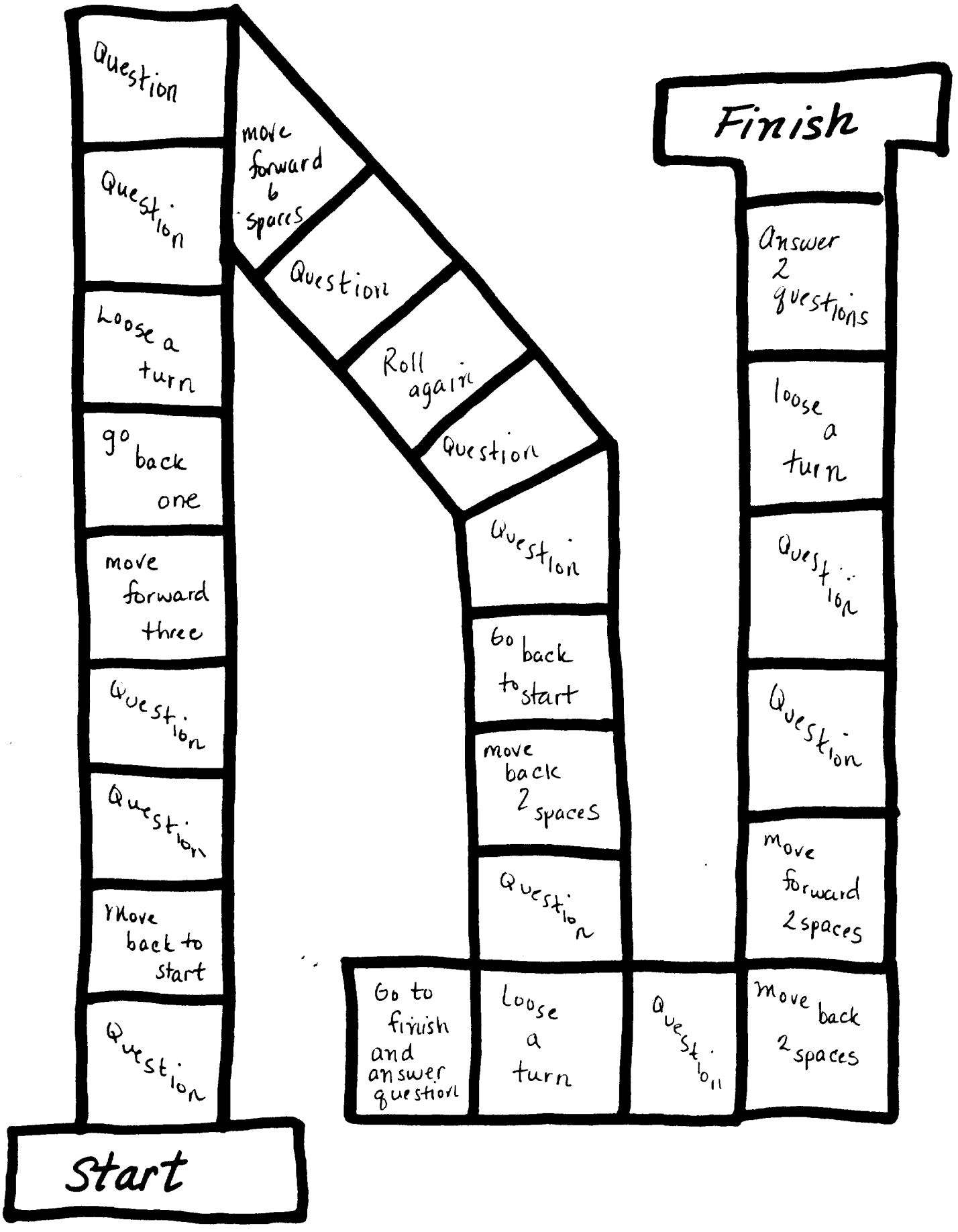


9. REGULAR BOARD GAME QUESTIONS ABOUT MATH

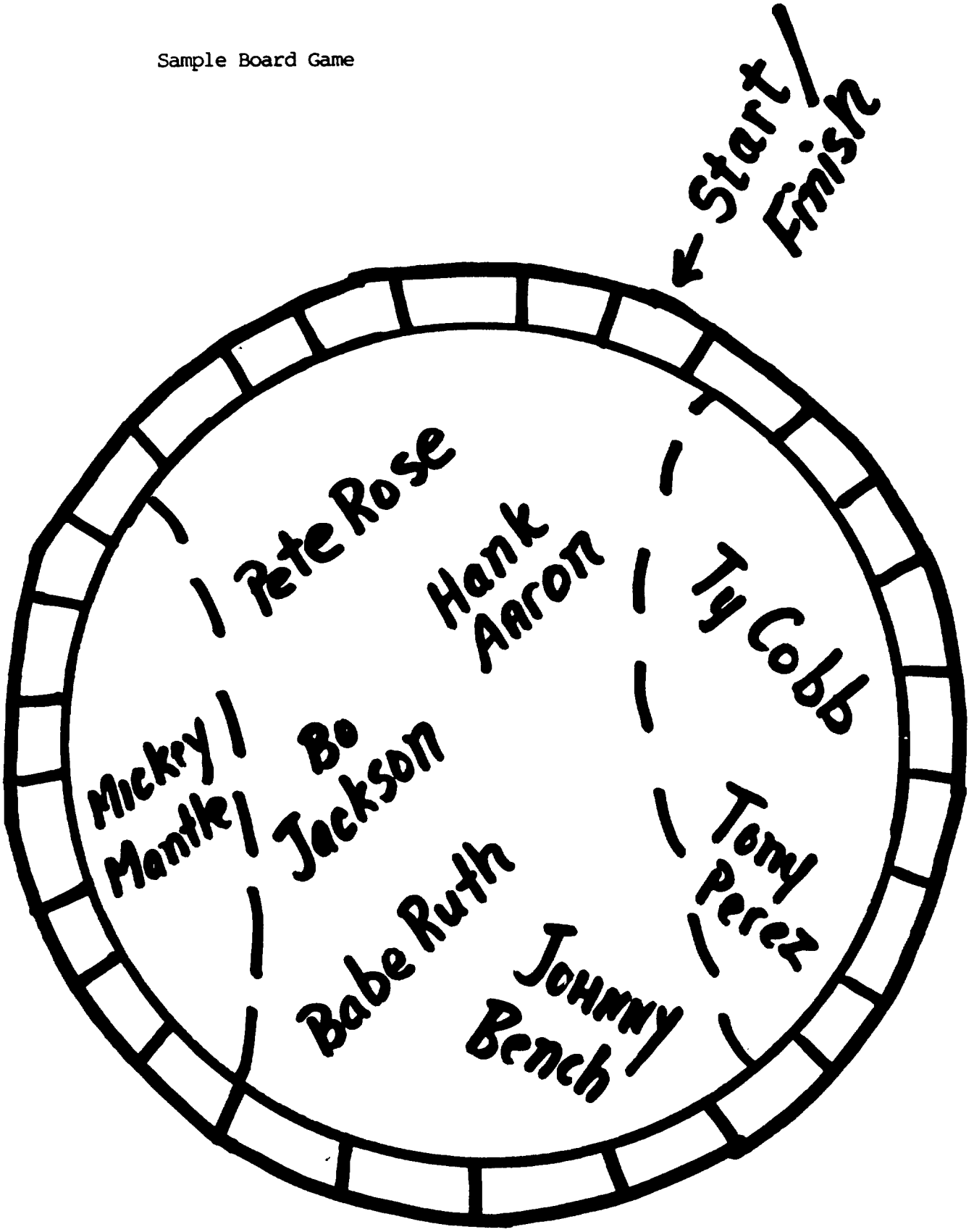
This is a learning center that has a variety of different board game boards for the children to use. The children select a board and play from start to finish by following the boards' directions. The games include a series of beginner, average, and advanced level questions. If they answer a question correctly they may stay at their place. If they answer the question incorrectly they have to stay there until they answer a question correctly.

These games are good for the children because they can help them work on story problems and following directions. Children will want to try out all the boards. Some boards will have trivia facts or general information for the children to observe while they play.

Sample Board Game



Sample Board Game



10. PROBLEM SOLVING QUESTIONS GAME

The idea of this game is for the teacher to give the children a problem that they, as a group, have to investigate and solve. Once they have an answer they check with the teacher to find out if they are correct. This is a great game for group work and investigation. The problems they are solving use higher level thinking skills and strategies.

The children enjoy this activity because they can discuss it with one another and work together to spark thoughts in each others minds.

HOMEWORK PACKETS

Children often have difficulty with doing homework on a daily basis. I have discovered a way that could be easier for the children to complete homework, get extra practice and allow for the parents to see and set aside a time to help the child with the homework of the week. In today's world it is very hard for some parents to monitor their child's studies and work. This homework packet idea will allow time for the parents to supervise the child and assist on their own time and schedule.

The child receives a packet each week on Monday morning. The packets are taken home and the work has to be completed by Friday of every week. This allows the parents an entire week to look at what the child is doing and which areas need more instruction. The packet will include a note from the teacher if there is special instruction needed in a particular area. After the child does the work he or she may turn it in when they feel it is correct.

This is a good idea for several reasons. The child can make the decision to procrastinate, complete the work early, or pace him or herself during the week. Homework Packets also reinforce organization and time limits. The packet is good for several reasons but mostly because it provides math skill reinforcement and allows more time in the class for group games and problem solving activities.

HOMEWORK PACKET IDEAS

1. Story Problems (made by the class)
2. Creativity Worksheets (with cutting and glueing)
3. Drill Sheets
4. Problem Solving Activities
5. Extra Credit Sheets
6. Work for the Whole Family

1. STORY PROBLEMS

Many children have difficulty with story problems because they have difficulty reading. Story problems can be something enjoyable to the child if it relates to that child. Having the children create their own problems develops higher level thinking skills and creativity.

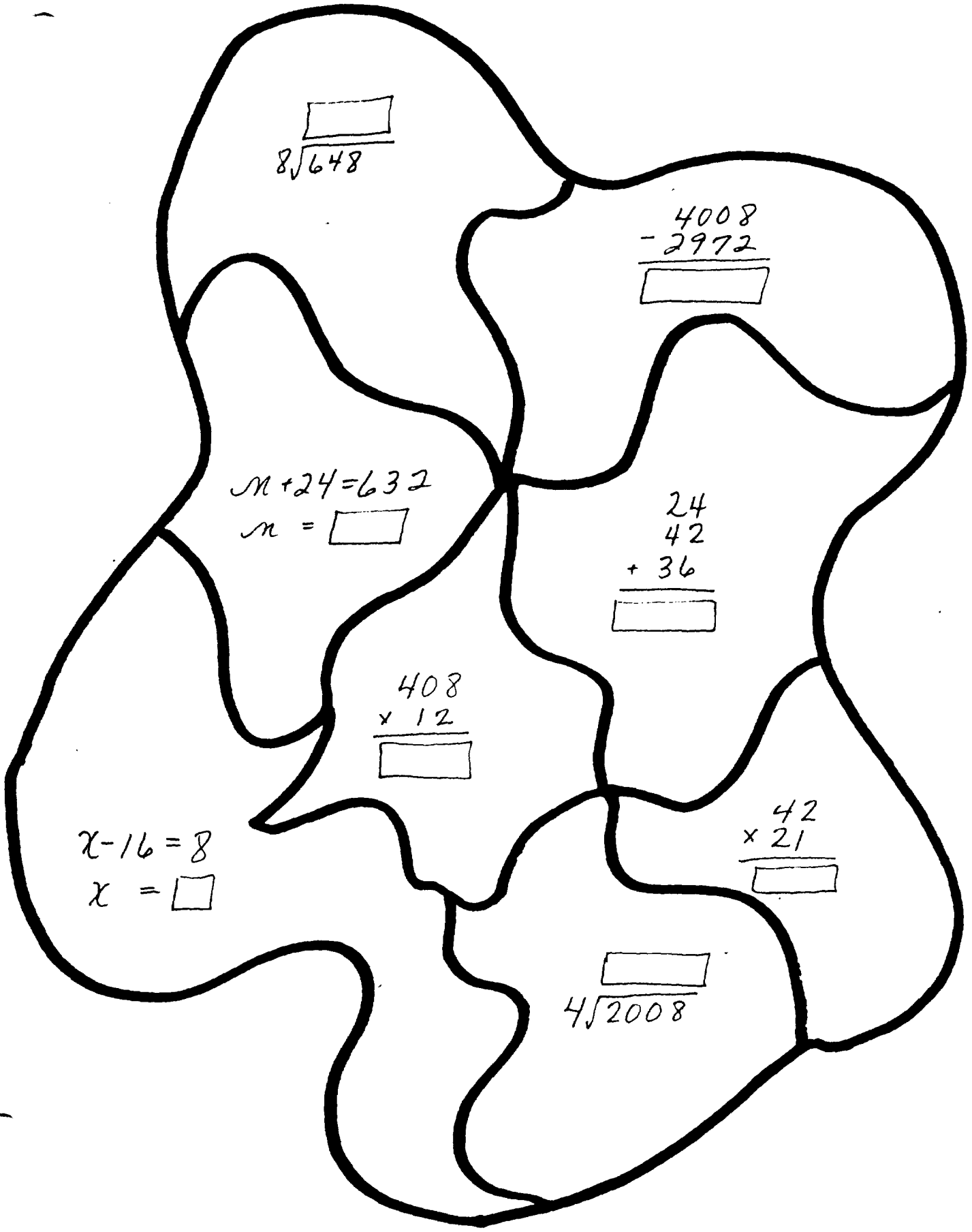
Including story problems in each homework packet gives children more practice. The children are being given an opportunity to write their own problem which reinforces vocabulary terms taught previously in class.

2. CREATIVITY WORKSHEETS

Included in the homework packet can be some worksheets which require cutting and gluing. Children will enjoy a break from drill sheets by being able to do problems with art. The children will also be given time in class to invent a math worksheet of their choice periodically throughout the year.

Some examples of cutting and gluing worksheets could be puzzles, placing the pieces from smallest to largest, or placing the clothes correctly on the model baseball player. The children would answer all the problems and then put the put the puzzle together in order on construction paper.

Creative Worksheet



3. DRILL SHEETS

A drill sheet could be included in the packet where the children are basically receiving extra practice in their math skills area. These sheets could include addition, subtraction, multiplication, division, estimation, and other basic math skills already discussed in the class.

The drill sheets will be challenging but short in length. The students will lose interest and become careless if a drill sheet is very redundant.

Drill Sheet

EXERCISES

A. 6297 + 2785	**B.** 395 + 177	**C.** 4377 + 1096	**D.** 476 + 395
E. 8146 + 958	**F.** 4595 + 1778	**G.** 5956 + 1988	**H.** 3794 + 699
I. 231 + 179	**J.** 3994 + 1768	**K.** 7382 + 2689	**L.** 5793 + 1688
M. 2197 + 868	**N.** 241 + 199	**O.** 1379 + 788	**P.** 1477 + 698
Q. 5948 + 1766	**R.** 2735 + 1789	**S.** 304 + 197	**T.** 9887 + 199

4. PROBLEM SOLVING ACTIVITIES

The problem solving activities sheets would involve problems children were expected to find a solution to and give a written answer. It is important in math to be able to calculate but, it is also just as important to be able to explain how and why. Children need the practice of writing and explaining.

These sheets would have two or three problems for the students to complete with a logical answer. They would write the answer and explain their reasoning.

This type of problem enables the students to use higher level thinking skills and creativity in their work. Many answers will be different. Inform the class that there are many correct answers. Answers will be correct if good support is given.

These are some examples of questions.

1. Given a map, describe the best way to complete a list of errands around town and why.

2. Design a list of things to take on a trip out west. Narrow the list to only ten things and describe in order the importance of why these items were chosen.

5. EXTRA CREDIT WORKSHEETS

The packet can include a variety of extra credit activity sheets to help boost the student's math grade. These sheets are strictly optional. They do not have to be completed but, if they are they will receive extra points toward their grade. If the extra sheets are completed and the homework packet is not, the children will not receive credit for the extra sheets.

This is a way to have children set their priorities. The extra credit also gives the students an opportunity to be more aware of their grades and have control to improve.

6. WORK FOR THE WHOLE FAMILY

The homework packet can include a sheet that involves the whole family. This can be a simple sheet that each member contributes to or just a parent or guardian. The children would have a variety of questions to answer with the help of a family member providing information about the question.

These are some examples of whole family questions.

1. Count the amount of money mom spends at the grocery store each week and total a months groceries in your family. This question can be discussed in class accounting for family size and age.

2. How many things are in your family/living room that cost more than fifty dollars? How much does your living room cost?

3. Count how many times the phone rings in an hour twice in the day. What are the average amount of rings in one day, week, or month?

HOMEWORK TIME IN CLASS

Homework is an extra activity for the child to complete after a full day of school. When a child is given a set of directions and it is misunderstood at home the homework does not get completed. It is very important that when an assignment is given from new material that the child be given time in class to begin it and ask questions.

When a child masters a skill in class and is able to complete a certain amount of an assignment correctly it is very important to praise this comprehension. By giving children time in class to work on a homework assignment you can really see who understands and who does not. Also if the teacher sets a goal to get a certain number of problems correct and they complete the work perfectly, then they will be excused from the rest of the assignment.

This idea of homework time in class benefits all students in different ways. It gives the students the goal of achieving the correct answer, it allows time for the teacher to reach the child who does not understand. It also gives her an idea of her teaching as a whole on the lesson and whether she needs to change her format for whole group instruction. Lastly, this activity gives the children who have mastered the skill a broader math base by allowing them to do games and activities at learning centers or in pairs

while the teacher provides extra instruction time for the slower learners in the class.

PERFECT PAPER POINT SYSTEM

Children have always needed praise It can occur in many forms. Along with praising, and hopefully motivating, children verbally and with tokens of stickers, smiles, and other small gestures additional forms of praise can be implemented. Many children in today's society need to be motivated with more than a token or sticker. So, I have discovered a different system to help children want to learn something and learn it perfectly.

This idea is called the perfect paper point system. It will help teachers motivate their students to like and perform well in math. Math is a very "cut and dry" subject mostly offering only one answer. If children can achieve success in completing a paper perfectly they should receive a number of points according to the difficulty level of that particular paper.

After a certain number of points have been achieved a reward of some kind will be given to the child.

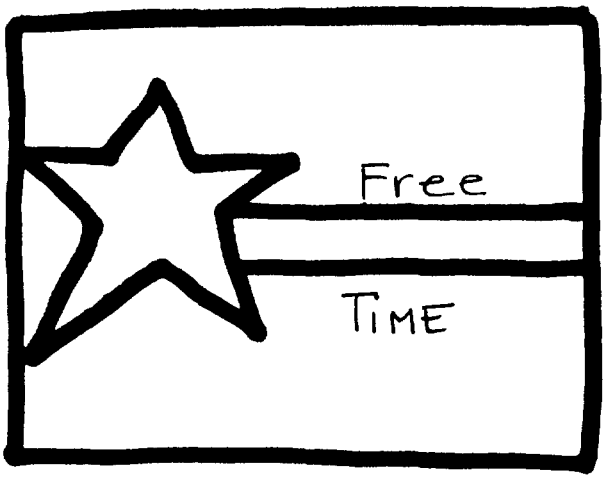
PERFECT PAPER POINT SYSTEM PRIZES/AWARDS

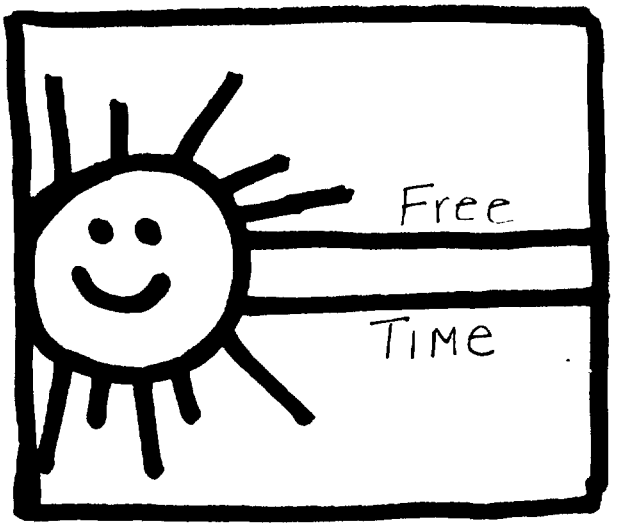
1. Free Time
2. Friday Candy Selection
3. Certificates
4. Lunch with the Teacher
5. Snacks for the Class

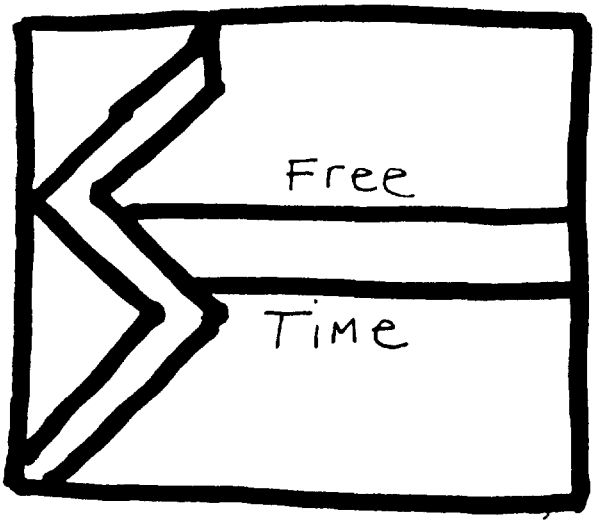
1. FREE TIME

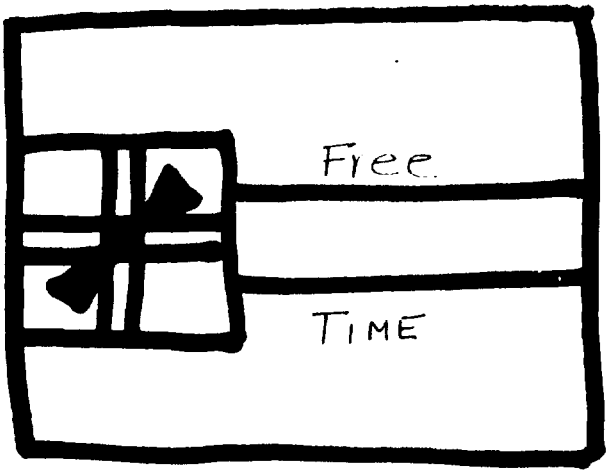
The children can be given free time if that is the reward of the perfect paper. In this free time the students may choose to do an activity of their choice. When free time is given the students are given a card to hold until free time day arrives. The students who do not receive any free time will continue with class work and work toward a perfect paper next time.

Free Time Cards



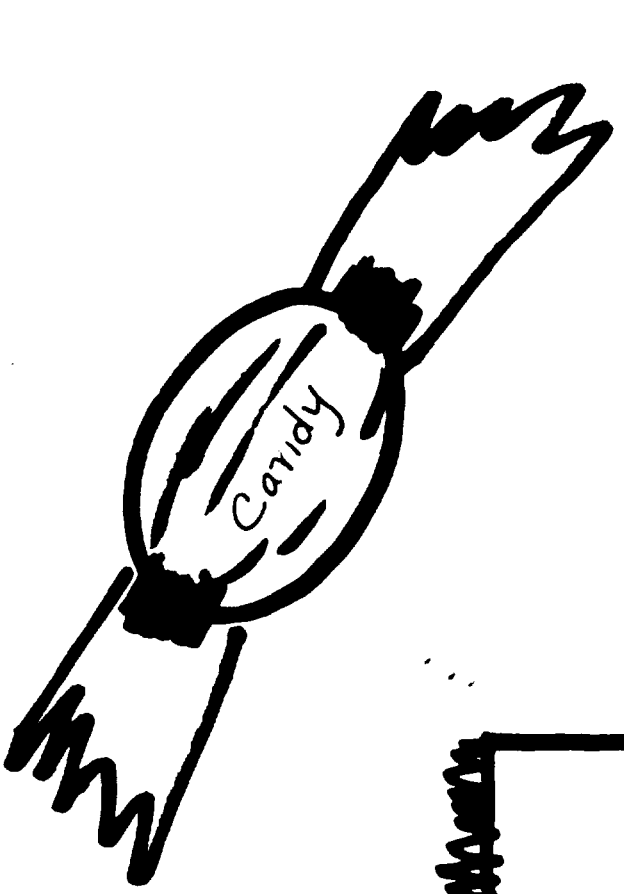






2. FREE CANDY SELECTION

The children can be given free candy points if that is the reward for that particular paper. The children will have to receive a certain number of candy points and on a Friday afternoon if they have received the given points then they have a choice of a candy bar. If the children do not have the amount of points needed then they simply save the points they have and hope to add to it for the next candy day.



3. CERTIFICATES

The children will receive a certificate if that is the reward given for that paper assigned. These will be very hard to achieve and if a student is successful it will go on the wall of the classroom for outstanding work.

4. LUNCH WITH THE TEACHER

The children will be able to have a special pizza lunch with the teacher or bake cookies in the room with the teacher while eating lunch. In order to receive this special invitation, the students can save their candy points accumulating to a higher amount than the candy bar. They will be giving up the candy bar but receiving a higher token of success. This is a decision the children will be able to make on their own. They will have many opportunities to achieve either award.

5. SNACKS FOR THE CLASS

Throughout the year the teacher will inform the students of each homework paper and what it is good for in the perfect paper point system. Occasionally, there will be a paper the teacher will put into the packet and not tell the children it is the "snacks for the class paper".

This is motivation for the class to get all one hundred percents on the work for the week. If the whole class achieves "one hundreds" on the chosen sheet then, the class will receive a snack at the end of the day. Children are interested in which sheet they need to do well. This therefore promotes them to concentrate on all the homework sheets.

TUTORS

To teach something to someone is to reinforce your own knowledge of that subject area. One of the ideas I have researched is that children can teach other children. In my student teaching experience I watched a child read to a lower level student and help him on his tests by assisting in instructions and higher level reading, after the higher level student had completed his own work. This was a wonderful way to have children help other children. Working together is very important and math can help us to accomplish this.

Allowing the students to be their own teachers will help increase cooperation and motivation in the classroom. When students are able to teach one another a skill then I am aware it is a concept well understood.

The way to implement this in the classroom is to divide the class into pairs. The children will then explain the concept to one another. They must work with one another until both students are able to comprehend the skill and explain it fully to the teacher or aid in the class. Children will be able to practice in the beginning of the year with simple tasks which reinforce the concept of working with one another as personal tutors.

MATH WHOLE CLASS GAMES

The first time I introduced a game to my class during my student teaching I discovered many things. Games are a very good motivational activity; children like you because it is something fun; and, it provides a reinforcement skill of practice and drill. Children become very excited about games and fun in school because it makes learning more interesting. Whole class games are a thing to use for motivation, class cooperation, and reinforcement of certain math skills.

There are many ways to teach and play games. Have the children become accustomed to the games with practice and drill. Also introduce only one game at a time.
When dividing the class into teams use discretion with ability. Inform the class that this is only a game and everyone will eventually win and lose at sometime during the year. Lastly, do not use the games as a treat. Plan the games in the instruction just as any other lesson. By not informing the children of the game early on in the day extra noise and confusion can be avoided. Have the children become familiar with the activities so they can be used periodically and with ease.

MATH WHOLE CLASS GAMES IDEAS

1. Chalkboard Team Games
2. Pizza Math
3. Algebra (hands on equations)
4. Cross Out Singles
5. Largest Sum / Greatest Difference
6. Magic Slates
7. Pico Centro
8. Lunch Meal Game
9. Buzz
10. I Have 12...
11. Multiplication Bingo
12. Group Trivial Pursuit
13. Toothpicks

1. CHALKBOARD TEAM GAMES

Children enjoy working in teams and playing just about anything where they get to write on the chalkboard. Chalkboard Team Games is simply dividing the students into teams of equal abilities and having them do problems at the board working towards points for their team. The object is to work the problem and receive a point for the correct answer. They will then receive an extra point for being the first one to finish with the correct answer.

There are many different questions to have the children answer at the board. Basic math and algebra are two examples. They can also do games where the whole team plays and each child takes a turn adding to a number; then when the whole team finishes they receive a point if it is correct.

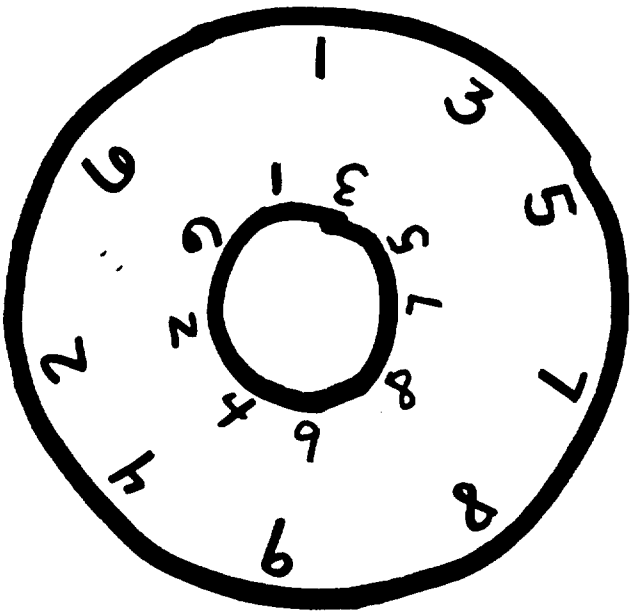
The children enjoy teams and playing games with each other. This is a fun activity and it is very good for uniting the class as a whole expressing that everyone has an equal part.

2. PIZZA MATH

Pizza math is a very simple whole class game that the children enjoy for two reasons. It is a game played at the board and it is very simple. The children are divided into teams of equal ability. One team member goes to a pizza circle on the board. A number is shouted out and the children have to answer the questions around the pizza piece correctly. The children will be adding or multiplying numbers. They write the answers on the board quickly.

When everyone is finished, the teacher corrects the mistakes and distributes points to the correct teams. One point is given for all correct answers and, an extra point is given to the first team finished with the correct answers.

This game is excellent for cooperation, competition at the child's level, and team effort. The children enjoy practicing their addition and multiplication without pushing a pencil.

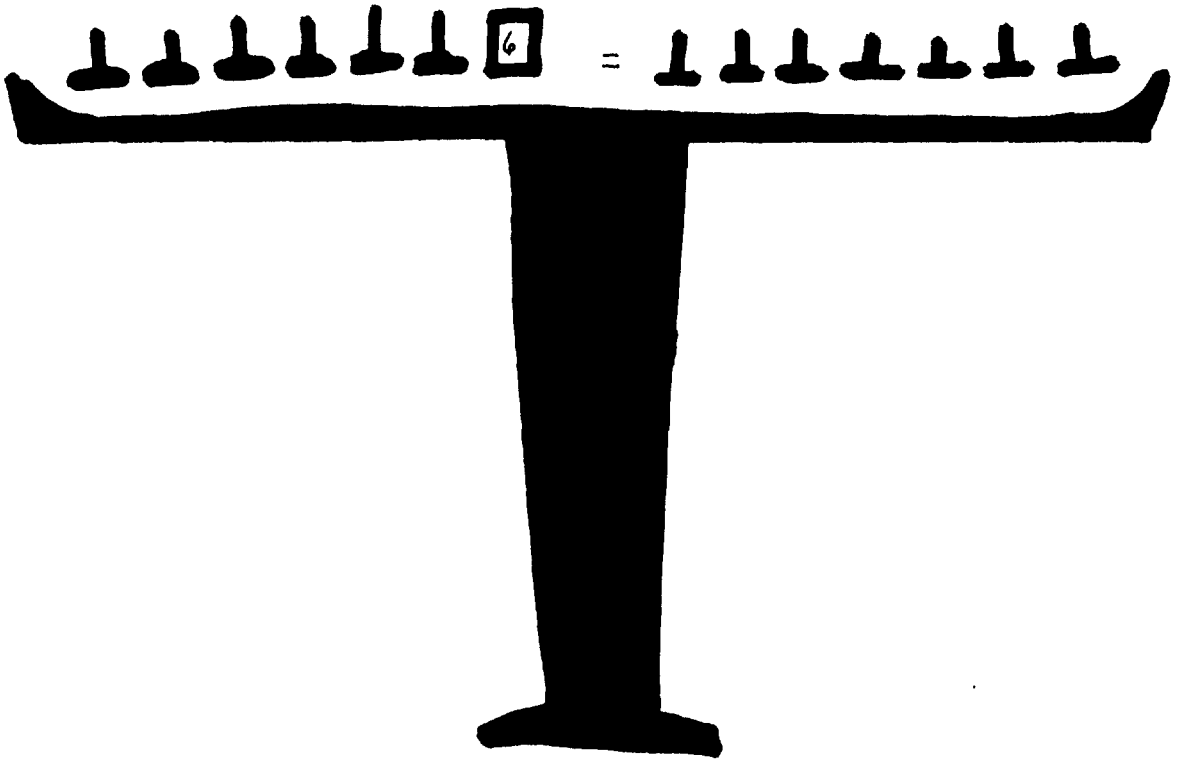


3. ALGEBRA

Algebra is a skill that is generally introduced to children beyond the elementary level of school. This is a skill that children can learn in their elementary years which can be a fun math whole class activity too.

Each child receives a scale, dice with numerals written, and eight pawns. The child is given the explanation that a pawn is used when there is an X in the equation and a die is used for a number. When the problem is introduced they begin by setting the correct pieces on the scale according to the equation. An example is 2X+4X+6=7X.
The children's scale would have six pawns and a six die on the left and seven pawns on the right. Then they would begin to plug in numbers for X, trying to find the solution to make the problem balance. After doing this several times, short cuts can be shown and children will enjoy it even more.

This is a simple approach to the skill of algebra that children in an elementary environment enjoy. This develops higher level thinking and good listening habits. Children are reinforcing basic math skills while processing new methods of math.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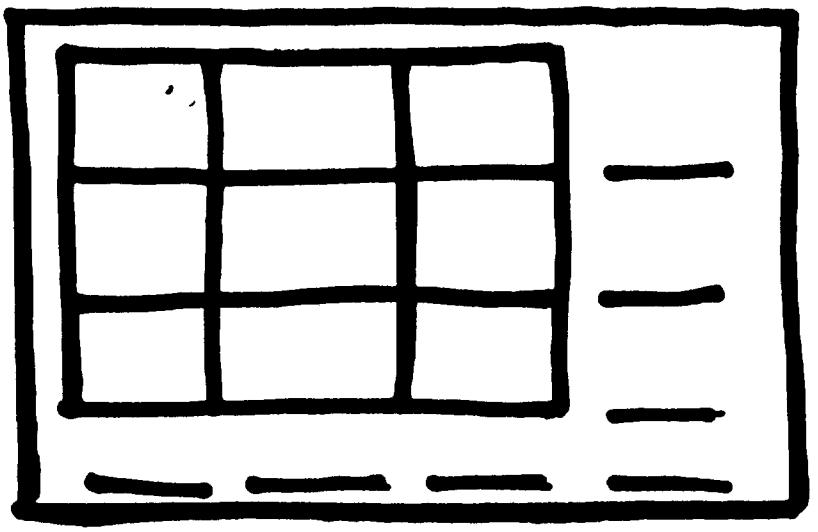
4. CROSS OUT SINGLES DICE GAME

Cross Out Singles is a very simple game in which the children are given dice and a rub erase graph sheet. They roll the die and place the number anywhere they choose in the graph sheet. After they have filled in the graph completely, they add the numbers across and down to fill in the spaces provided. If a child has a number that is not shown at least twice they have to cross it out. When they have finished crossing out all the single numbers they total the rest of the numbers and the highest amount wins a point for that game. The first child to receive five points wins the game.

This is an excellent game for a few reasons. It can be played in pairs, as a class, or in small groups. It provides reinforcement for addition and number recognition. The children will eventually move to a higher level of thinking and begin problem solving skills by having a plan on where to put numbers. Children enjoy this game a great deal. It is a quick activity to use for extra moments throughout the day as well as a learning center.

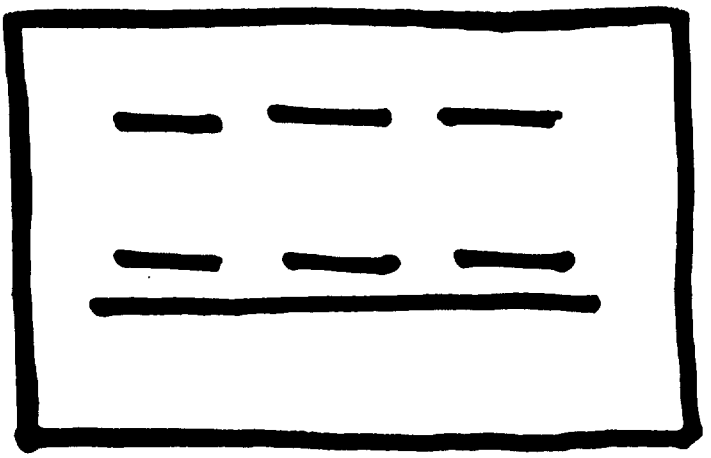


5. LARGEST SUM / GREATEST DIFFERENCE

Largest Sum / Greatest Difference is an excellent game for a learning center because it provides reinforcement in addition, subtraction and multiplication. The children play the same game but can choose which skill to practice.

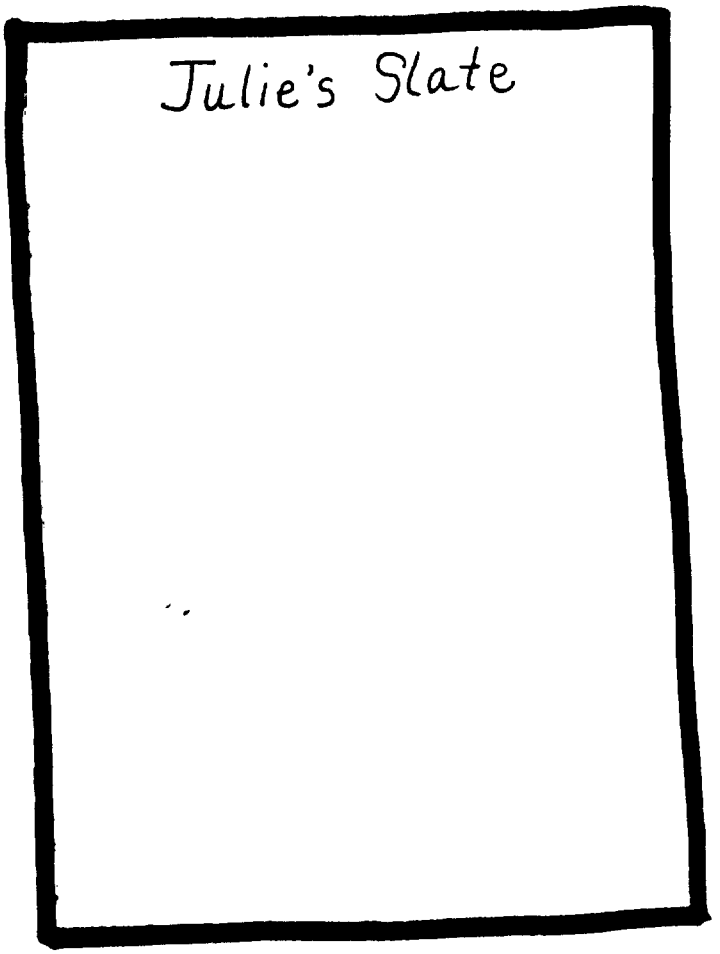
The children are given dice and a rub erase sheet with blanks to fill in numbers. They fill in the numbers by rolling one die at a time. After they have filled in all the number slots they add, subtract, or multiply them together. The child with the largest amount in addition or multiplication and the smallest amount in subtraction wins a point for that game. The child reaching five points wins the game.

This game is a lot like Cross Out Singles because it challenges the learner to think about where to put the numbers. The game's strategy is similiar but also has to do with luck making it a lot of fun!



6. MAGIC SLATES

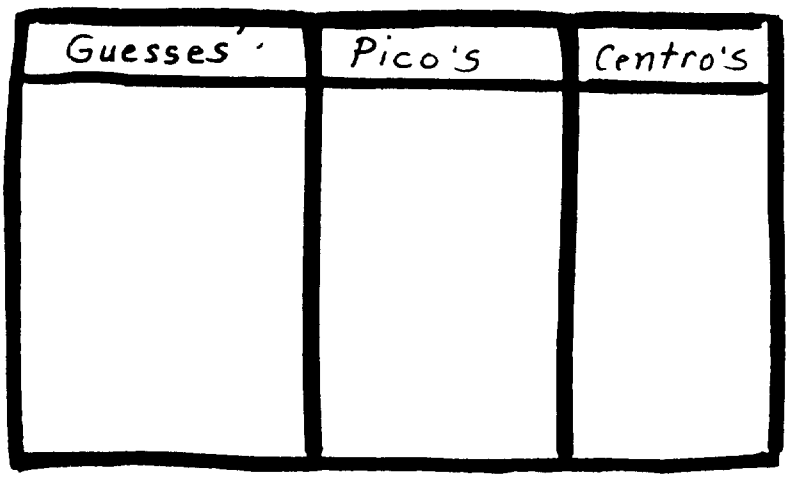
A magic slate is a white piece of construction paper laminated with the child's name written on the top. These can be used for practice in class, for discussion problems that require paper and pencil, and for basic math practice. The children are given the slate in the beginning of the year with a dry erase crayon and eraser. They can use the slate in math and other subjects. The slates are excellent tools throughout the year and eliminate messy desks and scraps of paper on the floor.



7. PICO CENTRO

Pico Centro is a game where the children have to guess a two or three digit number by being given clues about the number. The children look at the board or an overhead projector with a chart of three columns. The first column contains a number that someone guessed. The second column is called the Pico column. This column tells you how many numbers are correct digits but, in the incorrect places. The third column is a Centro column. This column states the number of correct digits in the correct places. The children use those two clues to figure out the unknown number. The most difficult part of the game is that the children are not told which digits are the picos and the centros.

When introducing this game, it is very important to start slowly and, only use two digit numbers. The children try to see how many times it takes to be able to guess the correct number. This game develops higher level thinking and strategy skills. They enjoy it a lot because they are competing with the teacher as an entire class.



8. LUNCH MEAL GAME

The Lunch Meal Game is a game in which students will be able to calculate which meal is best liked throughout each month of the year. It is a poll taken each day in the beginning hour and the children keep track of how many lunches were bought. At the end of the week they total which meal was the most popular. At the end of the month they will add to find which meal was also most popular. Then, at the end of the school year they can tally which meal their class chose to eat most.

This is fun for the kids and they look forward to seeing the results. By presenting this whole class activity the children will gain knowledge in record keeping. They will also develop skills in fractions and figuring out percentages.

The Lunch Meal Game can be used in many grade levels. Children gain a better understanding of other math processing skills and have fun learning them.

9. BUZZ

Buzz is a simple game the children can play in the class as a whole. The teacher starts by giving a number to the class. The first child to start the game says one and it moves around the room in numerical order. The number the teacher said in the beginning cannot be said; the child says buzz in it's place. The children then continue on with the next number. Each time a multiple of the number given in the beginning arises, the child says "buzz".

For example, if the number given by the teacher is six, the children would say "one, two, three, four, five, BUZZ, seven, eight, nine, ten, eleven, BUZZ, etc...".

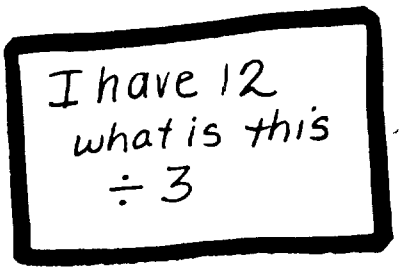
The children enjoy the game buzz because they must really think and listen at the same time. The teacher may use a process of elimination to find a winner.

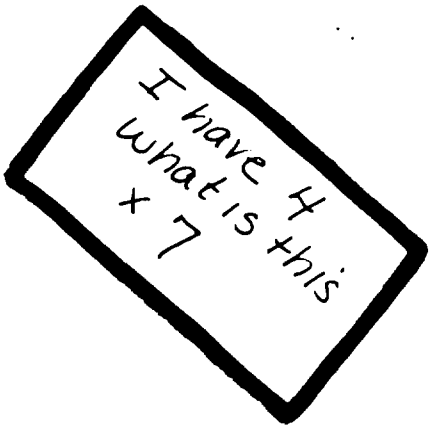
10. I HAVE 12...

I Have 12 is a whole class game where the children reinforce the basic math skills while being very careful listeners. Each child is given a card. The card says "I have fifteen" "What is this divided by 3?". The children read their card and the person with the answer five, would then read their card. It moves around the room randomly. The children must work out each problem and listen very carefully to each problem.

This game is a harder one for an entire class because of some attention deficit children. A way to make it simple for the children is to pair them to help one another with the problems. Also it is more enjoyable for them to work with someone to find the correct answer.

This game could be used as a class challenge. When the class eventually completes an entire set of cards without any mistakes or help, a reward can be given.



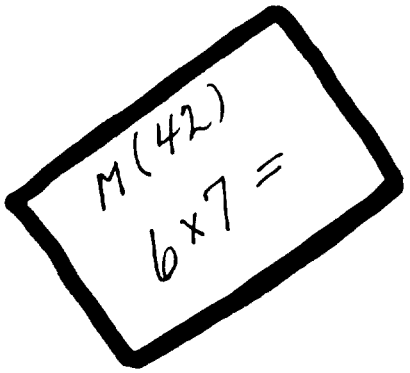


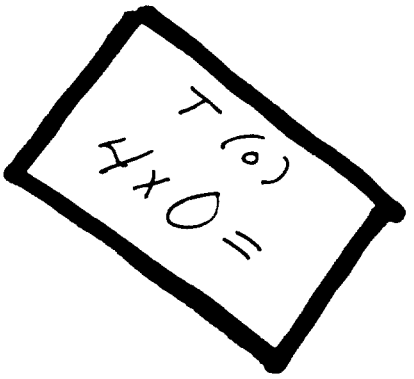
11. MULTIPLICATION BINGO MATH

Multiplication Bingo Math is very much like the regular game of bingo. The only difference is the children have to find the space by figuring out a problem when they have an answer, they place a chip on that space. The children enjoy this because it is a challenge to win, and in order to win they have to do the math work.

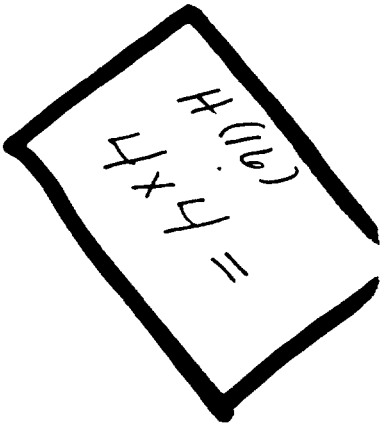
Many of the problems for the game can be at different levels. There can be one, two, and three digit game questions and boards. This game can also be adapted to addition, subtraction, and division. This game requires children to listen and calculate problems along with remembering which column the answer is in on the board.

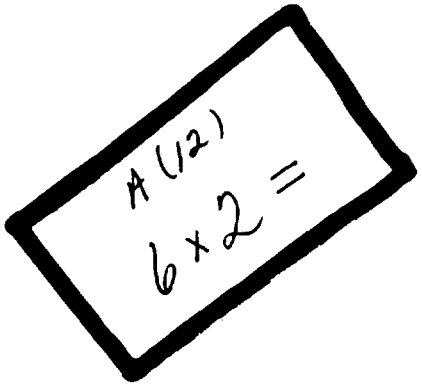
Math Bingo Board

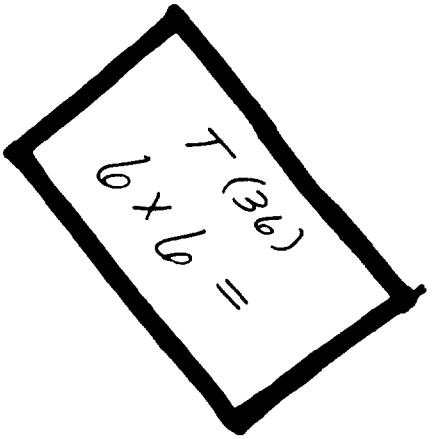




M	A	T	H
42	12	36	40
4	68	72	16
1	7	0	21
8	11	81	6







12. TRIVIAL PURSUIT MATH

Trivial Pursuit Math is a great game the children will enjoy playing at the many different levels available. This is set up similar to the original Trivial Pursuit. Each child moves around the board answering questions trying to land on the main category space. When they land on that space and are able to answer the question correctly then they mark a check on the score card for that section. The first person to receive five check marks, one in each category, wins the game.

The five different categories in the game are basic math, money math, story problems, algebra, and geometry. The questions in each section deal with some area of that particular area of math. For example, basic math could be as simple as twenty-four plus forty-four or seven hundred and thirty-six divided by twenty-two. Money math could ask a question dealing with estimating the cost of a car being given two choices or asking how many dimes are in three dollars and fifty-three cents. Story problems could be very simple or more complex problem solving questions. Geometry could be stating the definition of a square or triangle. Last, algebra could be as complex as $2x+4x+5x=22$ or as simple as $n+2=8$.

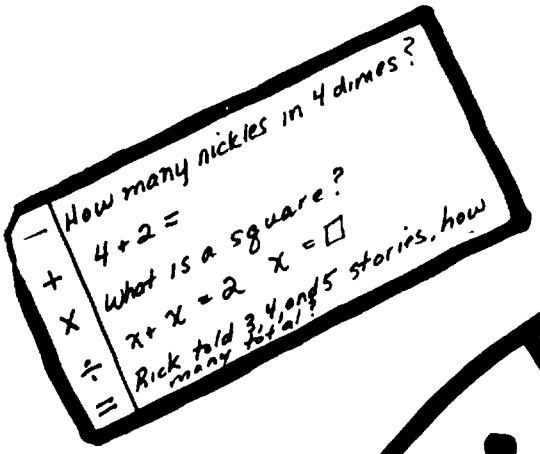
This game is an excellent strategy game to have children play for many reasons. It helps them plan their way around the board and challenge their opponent's

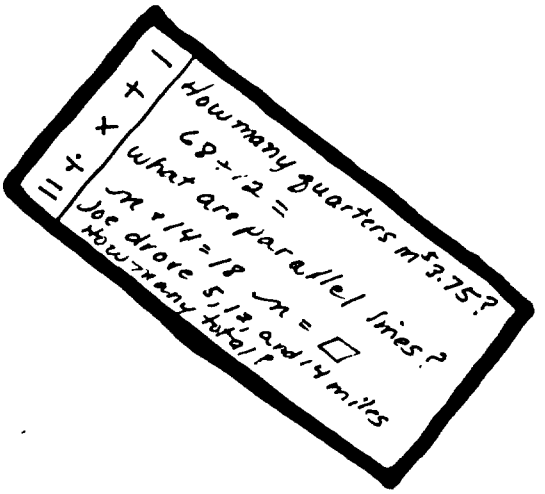
strategy. It also serves as a reinforcer in drill and practice of basic math skills.

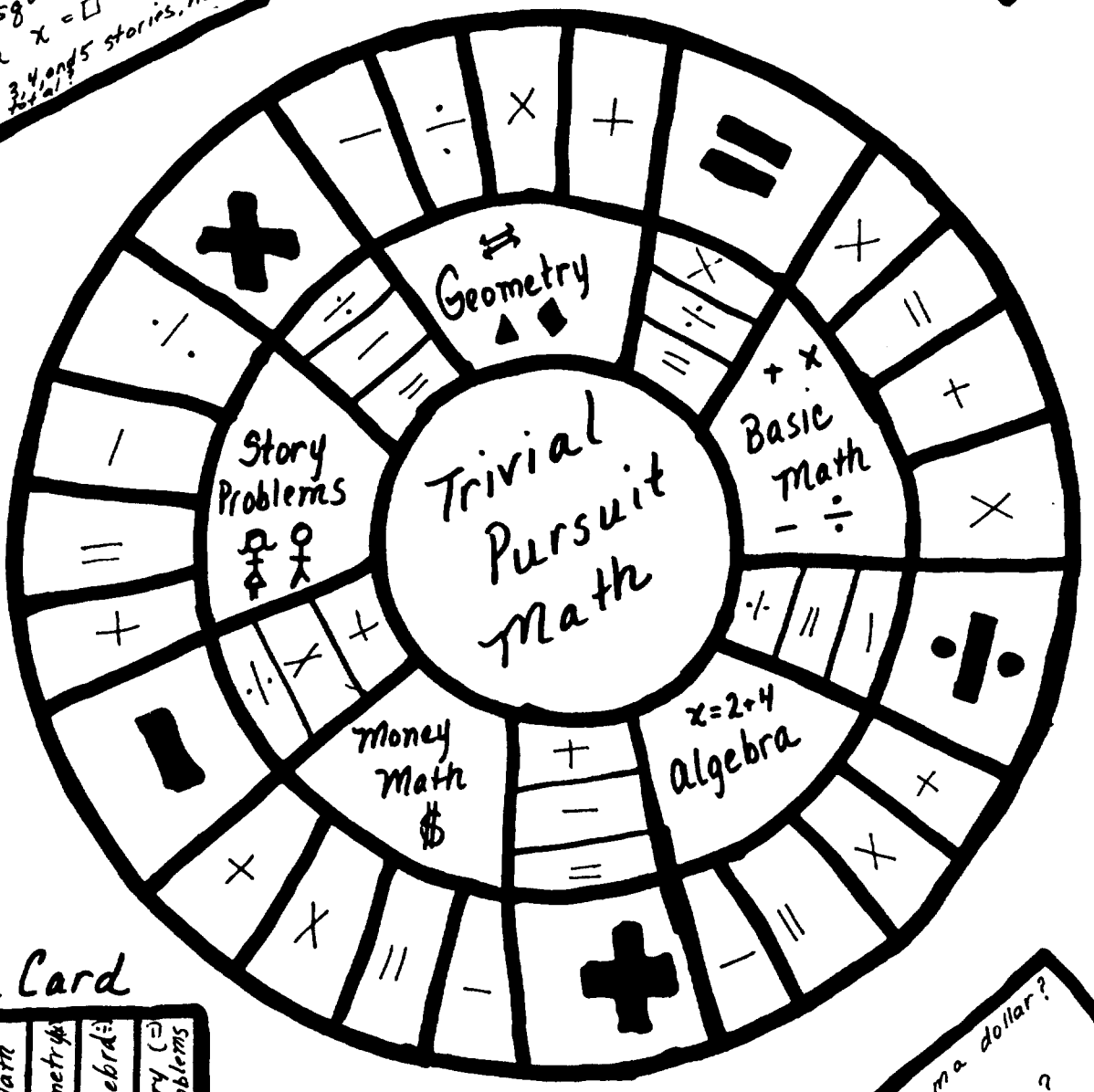
There would be three different levels of questions. The children could start with beginners level and work their way up to the more advanced level questions of the game.

This game can also be played in a whole class situation by making teams and letting the children figure out the answers as a whole. The actual game board would not be used. The teacher would simply give questions and have a certain amount the children would have to get correct.

Trivial Pursuit Math
Board

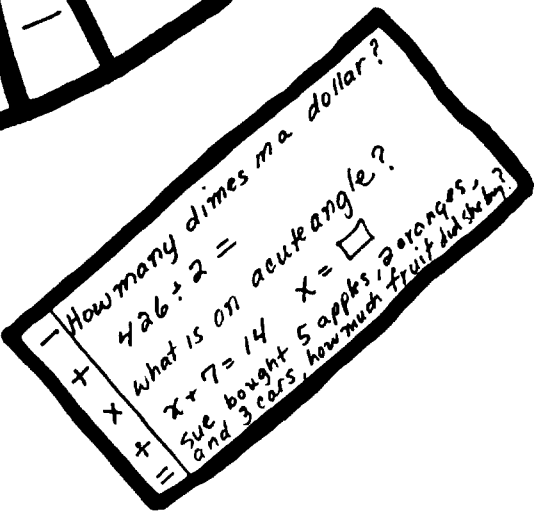






Score Card

Name	$ Math	Basic (+) Math	Geometry	Algebra (=)	Story Problems
Jim		✓			✓
Sally			✓		
Ted		✓	✓	✓	



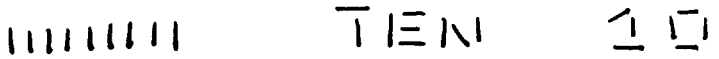
13. TOOTHPICKS

Toothpicks is a whole class activity where children are given a handful of toothpicks and asked to answer questions by arranging the toothpicks and drawing the answers.

The children find this activity to be a challenge. Some of the questions are harder than others. This activity requires that the children think very divergently. They are allowed to share answers with the teacher and after a period of time they can be given the answer as a class.

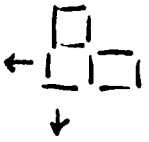
Some of the questions are the following.

1. Here are 9 toothpicks. Can you make ten without breaking any?



2. Here are 9 toothpicks which form 3 triangles. Can you move just three toothpicks and form 5 triangles?

3. Take away 2 toothpicks from the following arrangement and leave two squares of equal size.



CLOSING

The lifelong process of math is not something that should be a negative experience. There are many ways to make math enjoyable and keep anxiety low from the beginning. It can be very enjoyable for even the slow learner from the start. Math attitudes are changing in schools today and hopefully will continue to change in the outside world starting with better instruction in school.

By having a math program that includes many or some of the ideas I have discussed throughout this paper, I feel attitudes will change for many reasons. This type of math program gives the student praise and a sense of self worth in their work. It gives the student something to work towards and, it is more exciting than a routine of daily seatwork. This type of program also benefits the slower learner, the more aggressive learner and, the parents. Also, a development of higher level thinking can be achieved through challenging games and activities stated throughout the program. Overall, math should be a subject children enjoy doing in school.

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